

## ABSTRACT OF THE DISCLOSURE

A pressure swing adsorption (PSA) system including a first group of PSA modules having a plurality of first PSA modules, and a second group of PSA modules having a plurality of second PSA modules. The system includes a feed gas manifold, a product manifold, and a waste manifold connected to the first PSA modules and the second PSA modules. Each first PSA module operates on a first PSA cycle in synchronization with the other first PSA modules, and each second PSA module operates on a second PSA cycle in synchronization with the other second PSA modules. The first PSA cycle is offset from the second PSA cycle. The PSA modules include a plurality of pressurized adsorbent chambers, an inlet manifold, and an outlet manifold. A rigid structure is provided that connects the inlet manifold to the outlet manifold, and structurally joins the inlet and outlet manifolds to the adsorbent chambers.

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